

About Disposal of Waste Medicines from Residential Medicine Take-back Programs

Pharmaceutical Waste – Regulatory designations as hazardous or dangerous waste

When discarded, the chemical properties of most medicines designate them as either hazardous waste under federal RCRA regulations and/or as dangerous waste under Washington State regulations.¹ (See examples for commonly used medicines on page 4.)

After RCRA was established in 1976, lists of hazardous wastes were developed, which included chemotherapy drugs and other medicines. About 5% of medicines sold in 1976 were designated as hazardous waste. Unfortunately, the RCRA lists have not been updated to consider the thousands of new medicines, including chemotherapy drugs that have been developed in the last thirty years. One estimate suggests that if the RCRA lists were updated, approximately 15% of medicines sold today would be considered hazardous.² A recent report from the U.S. EPA's Office of the Inspector General, titled "EPA Inaction in Identifying Hazardous Waste Pharmaceuticals May Result in Unsafe Disposal", called on the EPA to create a process for updating the lists and ensuring that healthcare facilities are disposing of all waste medicines properly.³

Many more medicines are designated as dangerous waste under Washington State's Dangerous Waste regulations⁴ which are more stringent than RCRA. Washington State also considers criteria such as toxicity and persistence as criteria for designating waste as dangerous.

What is RCRA hazardous waste?

The federal Resource Conservation and Recovery Act (42 U.S.C. §6901 et seq. (1976)) – or RCRA - defines how hazardous wastes must be transported, stored, and disposed. Under RCRA, EPA has defined lists of types of hazardous waste.

What is Dangerous Waste?

Under RCRA, states can be delegated the authority to implement the hazardous waste regulation provided implementation is equivalent to, or stricter than, the federal law. Under this authority, Washington State developed the Dangerous Waste regulations (Chapter 173-303 WAC)⁴. The Department of Ecology enforces these regulations which are more stringent than the federal law to protect our health and environment.

Pharmaceutical Disposal at Properly Permitted Incineration Facilities

The current standard for disposal of waste pharmaceuticals collected from business sources is high temperature incineration to destroy the active pharmaceutical ingredients. The U.S. Drug Enforcement Administration (DEA) requires destruction beyond reclamation for controlled substances and accepts incineration as the current standard. The RCRA and Dangerous Waste regulations, as well as who the generator of the pharmaceutical waste is, determine which disposal facilities can be utilized.

Waste Medicines from Business Sources: Leftover, expired, or otherwise unusable medicines from business sources such as pharmacies, clinics, hospitals, or manufacturers must be disposed of properly as either hazardous waste or dangerous waste. Businesses contract with reverse distributors or pharmaceutical waste disposal companies to handle pharmaceutical wastes.

If the waste medicines can be separated into hazardous waste and dangerous waste then:

- The medicines that are designated as RCRA hazardous waste must be sent to a hazardous waste incinerator. These medicines cannot be disposed in municipal waste landfills, municipal incinerators, or medical waste plants.¹
- The medicines that are designated as dangerous waste may be disposed of at a municipal solid waste incinerator under a conditional exclusion that allows for use of municipal solid waste incinerators, see WAC 173-303-071(nn)⁵.

If the waste medicines cannot be separated, then all must be disposed of as RCRA hazardous waste.

Waste Medicines from Residential Sources: Federal and state regulations exempt wastes generated by households from hazardous waste regulation; however the medicines are the same and just as hazardous and dangerous. King County's Waste Acceptance Rule and Seattle's Municipal Code state that dangerous and hazardous waste from households should be disposed of properly, not in the solid waste stream⁶. In addition, some incineration facilities may only be able to accept waste medicines from residential take-back programs under the same standards that apply to business wastes.

It is not practical to identify and separate the waste medicines collected by residential take-back programs into the hazardous waste and dangerous waste categories. Therefore, residential medicine take-back programs need to properly dispose of all types of medicines mixed together.

A mixture of waste medicines (prescription and over-the-counter) collected from households will contain:

- Prescription medicines that are controlled substances;
- Medicines (prescription and over-the-counter) that are hazardous waste and/or dangerous waste;
- Other medicines that are non-hazardous and non-controlled.

Waste disposal facilities currently used by residential medicine take-back programs in King County

Clean Harbors in Aragonite, UT: Hazardous Waste Disposal Facility. Clean Harbors is the largest operator of hazardous waste incinerators in the country with six facilities, the closest to Washington is their facility in Aragonite, Utah.

Clean Harbors currently transports and disposes of medicines from the Bartell Drugs take-back program (no controlled medicines accepted) for \$1 per pound under a state contract available to governments and nonprofits. The facility is a 1725 mile round trip from Seattle, with regular transportation runs by Clean Harbors trucks.

Clean Harbors can accept medicines for disposal at its facilities if they are delivered by law enforcement under a continuous chain of custody.

The Local Hazardous Waste Management Program in King County routinely ships materials collected at household hazardous waste (HHW) sites to facilities around the country for proper disposal or recycling. This Clean Harbors facility is used for HHW materials which must be incinerated.

Spokane Waste-To-Energy Facility: Municipal solid waste incinerator permitted under WAC 173-434-160⁷, a regulation which defines minimum combustion temperatures, burn times, and other design and operation characteristics for high temperature incinerators.

Group Health uses this facility to dispose of medicines from their take-back program. This facility is also commonly used by law enforcement programs in Washington State to destroy evidentiary drugs and medicines collected from residents. The DEA has stated that it uses this facility and the Covanta Waste-to-Energy facility in Oregon to dispose of medicines collected during National Prescription Drug Take-Back events.

Costs for disposal of special waste are approximately \$0.10 per lb. The facility is a 560 mile round trip from Seattle.

Covanta Waste-To-Energy Facility in Brooks, Oregon: Municipal solid waste incinerator comparable to the Spokane Waste-to-Energy Facility.

Law enforcement programs in Washington State also use this facility to destroy evidentiary drugs and medicines collected from residents. DEA has stated that it uses this facility and the Spokane Waste-to-Energy facility to dispose of medicines collected during National Prescription Drug Take-Back events.

Disposal of medicines at Covanta's facilities is currently essentially no cost to medicine take-back programs operated by law enforcement and municipalities under a Covanta promotion that provides disposal for a minimal fee. The facility is a 425 mile round trip from Seattle.

Other Facilities Used by Law Enforcement Under Conditional Exemption

Since September 2010, most law enforcement take-back programs in King County have disposed of collected household medicines through the DEA's semi-annual National Prescription Drug Take-back Events. The DEA has provided disposal for all collected medicines turned over by law enforcement even if they were collected by an ongoing program. Local DEA agents report medicines collected in Washington State are disposed of at the Covanta WTE facility in Brooks, OR and at the Spokane WTE facility. The DEA has stated it will stop coordinating these collection events once it finalizes new regulations for handling of controlled substances by medicine take-back programs.

As a result of the cost and logistics, law enforcement take-back programs are often using nearby combustion or incineration facilities, such as lumberyard furnaces or industrial boilers, where they have arrangements for the disposal of evidentiary drugs. While such disposal practices are currently allowed under the conditional exclusion for law enforcement under WAC 173-303-071(n)⁵, these facilities are not the most environmentally sound choice, and not designed for disposal of hazardous or dangerous wastes. It is much more appropriate to dispose of waste medicines from residential sources at either a hazardous waste incinerator or at a solid waste incinerator permitted under WAC 173-434-160, such as the Spokane Waste-to-Energy facility or the similar Covanta facility in Brooks, Oregon.

Sources:

¹ WA Dept. of Ecology. (2008) *Guide for Dangerous Pharmaceutical Waste Generators in Washington State*, Publication 07-04-025. Accessed online 5/12/2010 from <http://www.ecy.wa.gov/pubs/0704025.pdf>

² Smith, C. (2009). Personal correspondence from Charlotte Smith founder of PharmEcology, a company that assists the health care and pharmaceutical industry with managing pharmaceutical waste. PharmEcology is now owned by Waste Management.

³ U.S. EPA Office of the Inspector General Report, May 25, 2012. *EPA Inaction in Identifying Hazardous Waste Pharmaceuticals May Result in Unsafe Disposal* http://www.epa.gov/oig/reports/2012/20120525-12-P-0508_glance.pdf

⁴ Washington State Dangerous Waste Regulations, WAC 173-303-141. Online at: <http://apps.leg.wa.gov/wac/default.aspx?cite=173-303-141>

⁵ WAC 173-303-071(n) "Excluded categories of waste: conditional exclusion". Online at: <http://www.ecy.wa.gov/programs/hwtr/pharmaceuticals/pages/exclusions.html>

⁶ King County Waste Acceptance Rule. Department Code No.: PUT 7-1-5 (PR). Effective Date: June 20, 2005. Full policy at: <http://www.kingcounty.gov/operations/policies/rules/utilities/put715pr.aspx> . and Seattle Municipal Code. Title 10 - HEALTH AND SAFETY. Chapter 10.76 - Hazardous Waste Management Coordination Committee.

⁷ WAC 173-434-160 "Solid Waste Incinerator Facilities: Design and operation". Online at <http://apps.leg.wa.gov/WAC/default.aspx?cite=173-434&full=true#173-434-160>.

Examples of common medicines that designate as hazardous waste under RCRA.

Medicine	Generic name (constituent)	Treats	Manufacturer	Waste Code
<i>**P and U listed waste must contain constituent as sole-active ingredient and be unused or discarded</i>				
Leukeran	Chlorambucil	Cancer	GlaxoSmith Kline	U035
Adipex, Ionamin	Phentermine	Obesity (appetite suppressant)	Gate	P046
Coumadin	Warfarin	Blood clots (anti-coagulant)	Bristol Myer Squibb, Barr, Taro	P001 or U248
Erythromycin Topical Solution	Erythromycin	Acne	multiple producers	D001
Cytosan, Neosar	Cyclophosphamide	Cancer	Bristol Myers Squibb	U035
Texacort Solution, 1%	Hydrocortisone	Itching	Yamanouchi, multiple producers	D001
Nicotine patches	Nicotine and Salts	Addiction	multiple producers	P075
EpiPen	Epinephrine	Anaphylaxis, severe allergic reaction	Dey Laboratories	P042
SSD Cream, Silvadene	Silver sulfadiazine	Burns	Aventis, King	D011

Examples of common medicines that designate as Dangerous Waste under Washington State's regulations.

Medicine	Generic name (constituent)	Treats	Manufacturer	Waste Code
Zoloft	Sertraline	Depression	Pfizer	WT02
Zocor, Vytorin	Simvastatin, Ezetimibe	High cholesterol	Merck, Schering-Plough	WT02
Fosamax Plus D	Alendronate sodium	Osteoporosis	Merck, Watson	WT02
Tylenol w/codeine	Acetaminophen/ Codeine phosphate	Pain	Ortho-McNeil, Pharmaceutical Associates	WT02
Aspirin	Acetylsalicylic Acid	Pain	Teva, Watson, Bayer Consumer & multiple producers	WT02
Retin-A Micro	Tretinoin	Rosacea	Johnson & Johnson	WT02
Advil and other brands	Ibuprofen	Inflammation; pain	Multiple producers	WT02
Ritalin, Concerta	Methylphenidate HCL	Attention deficit disorder	Novartis, McNeil Consumer	WT02
Ventolin, VoSpice ER, Combivent Inhalation, ProAir HVA, ProVentil, AccuNeb	Albuterol	Wheezing	GlaxoSmith Kline, Boehringer Ingelheim, Dey, Watson, Teva, Schering	WT02
Wellbutrin, Zyban	Bupropion	Depression	GlaxoSmith Kline, Mylan, Watson	WT02
Zantac, Tritec	Ranitidine HCL	Ulcers, reflux	GlaxoSmith Kline, Boehringer	WT02
Dimetapp, Cardec, Bromfed	Brompheniramine and pseudoephedrine	Cough	Wyeth, multiple producers	WP02
Chlor-Trimeton	Chlorpheniramine	Allergies, hay fever	Schering Plough	WP02